DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: STP00-0001-05(047) Cobb
P.I. No.: 721152
SR 3/US 41 from Paces Mill to Akers Mill

OFFICE: Engineering Services

DATE: August 22, 2011

FROM: Ronald E. Wishon, State Project Review Engineer REW

TO: Bobby K. Hilliard, PE, State Program Delivery Engineer
Attn.: Tim Matthews

SUBJECT: IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES

The VE Study for the above project was held February 21-24, 2011. Responses were received on August 18, 2011. Recommendations for implementation of Value Engineering Study Alternatives are indicated in the table below. The Project Manager shall incorporate the VE alternatives recommended for implementation to the extent reasonable in the design of the project.

ALT #	Description	Potential Savings/LCC	Implement	Comments
R-1	Use 1 ½ inch overlay in lieu of a 3 ½ inch overlay on existing pavement	$66,000	No	Based on the condition of the existing pavement, OMR approved the 3 ½ inch overlay design for the adjacent project (PI No. 720125) and they have stated that they would not approve the 1 ½ inch overlay for this project.
R-2	Provide a 10 ft wide multi use trail in lieu of a 12 ft wide trail on the west side of the project	$48,000	No	The proposed path serves as a connection between the Rottenwood Creek and Silver Comet trail networks. The 12 foot section matches the path dimensions on the adjacent project (PI No. 720125).
R-3	Provide a 5 in thick concrete section in lieu of a 4 inch thick section for the multi use trail	Proposed = $20,000 Actual = (-$1,000) Cost Increase	Yes, with modifications	The concrete multi-use path was incorrectly labeled on the VE plans as 4 inches thick. The approved plans for the adjacent project (PI No. 720125) include a 6 inch section. The typical sections for this project will be corrected to show the 6 inch section. While the 6 inch section has a higher initial cost, the life cycle cost savings negates most of the initial cost.

R-4	Provide a 2 ½ ft wide stamped concrete strip in lieu of a 6 ft wide grass strip on the left side of the project	$262,000	No	The Cumberland Community Improvement District (CCID) proposes to add streetscaping/landscaping along this route in the future. Reducing the 6 foot strip that is currently proposed between the curb and the sidewalk would limit landscaping options. Also, the plan changes associated with this change would delay the project schedule by at least 6 months and incur $240,000 in additional design fees.
R-5	Provide a 2 ft wide stamped concrete strip in lieu of a 6 ft wide grass strip on the right side of the project	$249,000	No	The Cumberland Community Improvement District (CCID) proposes to add streetscaping/landscaping along this route in the future. Reducing the 6 foot strip that is currently proposed between the curb and the sidewalk would limit landscaping options. Also, the plan changes associated with this change would delay the project schedule by at least 6 months and incur $240,000 in additional design fees.
R-6	Save 22 commercial parking spaces near Sta. 78+50 Lt. by shifting the alignment from Sta. 75+58 to Sta. 88+45 further to the right and eliminating Wall No. 3 (Sta. 77+89 Lt. to Sta. 79+46 Rt.)	$357,000	Yes, with modifications	Temporary impacts to the 22 parking spaces can be avoided by adjusting the location of wall #3. The plans currently show this wall at the bottom of the slope, adjacent to the parking lot. This design would require a permanent wall easement and temporary impacts to parking during construction of the wall. Shifting the wall to the shoulder break (adjacent to the multi-use path) as shown in the attached diagram would accomplish the same savings, but with minimal re-design effort.
R-7	Provide a 175 ft right turn lane to the access drive at Sta. 117+46 Rt.	$149,000	Yes	This will be done.
R-10	Slope the sidewalk and grass strip to the outside at Sta. 98+14 Rt.	Design Suggestion	Yes	This will be done.

R-11	Provide a 2 ½ ft wide stamped concrete strip and 10 ft wide multi use trail at all right turn lanes on the left side shoulder	$139,000	No	Reducing the shoulders and paving the buffer between the path and the roadway would result in a typical section devoid of landscape features and would be contrary to the CID's goal to make this a more pedestrian friendly corridor.
R-12	Provide 2 ft wide stamped concrete in lieu of 6 ft wide grass strip at all right turn lanes along the right side shoulder	$108,000	No	Reducing the shoulders and paving the buffer between the path and the roadway would result in a typical section devoid of landscape features and would be contrary to the CID's goal to make this a more pedestrian friendly corridor.
R-13	Save 11 commercial parking spaces near Sta. 74+50 Lt. by reducing the widths of the right turn lane, the multi use trail and the grass strip between Sta. 73+16 Lt. and Sta. 75+94 Lt.	$161,000	No	The proposed shoulder encroaches on the parking spaces near Sta. 74+50 Lt. by approximately 26 feet. The VE recommendation would only reduce the encroachment by 7'6", and would still impact the parking spaces.
R-14	Eliminate the short right turn lane at Akers Mill Rd. (Sta. 119+00 Rt. To Sta. 122+00 Rt.) by making the 4th lane a right turn lane	$25,000	Yes	A capacity analysis shows no change to the LOS; therefore, this will be done.
W-2	Reduce the height of Wall No. 2 (Sta. 80+00 Rt. To Sta. 87+06 Rt.) by shifting the wall closer to the existing ROW and grading the slope	$334,000	No	With the current design, wall #2 is approximately 34 feet from the existing ROW. It was the intent of this design to minimize impacts to the existing tree buffer between the River Parkway apartment complex and the proposed roadway. VE alternative W-2 would completely eliminate the tree buffer.
W-3	Use a gravity wall with handrail in lieu of a MSE wall for Wall No. 6 (Sta. 107+87 Rt. to Sta. 106+62 Lt.)	$56,000	Yes	This will be done.

W-4	Use a gravity wall with handrail in lieu of a parapet retaining wall for Wall No. 7 (Sta. 114+95 Rt. To Sta. 116+54 Rt.)	$32,000	Yes	This will be done.
W-7	Provide a gravity wall from Sta. 116+00 Lt. to Sta. 117+00 Lt. to save parking spaces	$98,000	No	The gravity wall alternative proposed by the VE Team would still impact these parking spaces. The wall and multi-use path would both encroach on the parking spaces.
W-8	Remove the Type H Traffic Barrier and provide a 42 in pipe handrail on top of Wall Nos. 1, 3 and 6	Proposed = $82,000 Actual = $21,000	Yes, with modifications	Wall Nos. 1 and 6 have been eliminated from the project. This change will be made to Wall No. 3, and the proposed savings have been revised accordingly.
D-1	Provide underground detention in lieu of an above ground detention basin at Sta. 83+00 Lt.	$258,000	No	The VE estimate assumed $315,000 in cost savings by converting the required ROW for this detention structure to permanent easement. For maintenance purposes, GDOT requires that all permanent drainage structures be placed on the right-of way.
D-2	Use additional cross rains to reduce longitudinal drain pipe requirements	$30,000	No	The current design reduces undesirable maintenance of traffic during construction and future maintenance of additional cross drain pipes. Also, this alternative would require a complete redesign of the longitudinal drainage system which would cost approximately $20,000.

The Office of Engineering Services concurs with the Project Manager's responses.

Approved: Gerald M. Ross **Date:** 8/26/11

Gerald M. Ross, PE, Chief Engineer

REW/LLM
Attachments
c: Russell McMurry
Bobby Hilliard/Stanley Hill/Tim Matthews
Darrell Richardson
Paul Liles/Ben Rabun/Bill Duvall/Bill Ingalsbe
Larry Bowman
Lee Upkins/Dona Welch
Ken Werho
Lisa Myers
Matt Sanders

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: STP00-0001-05(047), Cobb County
P.I. No.:721152
SR 3/US 41 Cobb Pkwy fm Paces Mill
To Akers Mill Road

OFFICE: Program Delivery

DATE: August 18, 2011

FROM: S.H. Bobby K. Hilliard, PE, State Program Delivery Engineer

TO: Ronald E. Wishon, State Project Review Engineer
Attn.: Lisa Myers

SUBJECT: RESPONSE TO VALUE ENGINEERING STUDY ALTERNATIVES

Attached are the responses for the Value Engineering Study. This office concurs with the responses.

If you have any questions, please contact Tim Matthews, PE, Project Manager at 404-631-1568.

S.H.
BKH:SH:twm

c: Russell McMurry

Moreland Altobelli Associates, Inc

2211 Beaver Ruin Road, Suite 190 • Norcross, Georgia 30071 • 770/263-5945 • Fax: 770/263-0166 • ma@maai.net

Thomas D. Moreland, PE, Chairman/CEO
Buddy Gratton, PE, President
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Henry E. Collins, Jr., Vice President
Richard C. Boullain, PE, Vice President
Bradley M. Hale, PE, Vice President
Albert J. Joyner, Jr., Vice President

August 10, 2011

Mr. Tim Matthews
Georgia Department of Transportation
Office of Program Delivery – 25th Floor
600 West Peachtree Street NW
Atlanta, GA 30308

Re: Response to Value Engineering Recommendations
SR3/US 41 Cobb Pkwy Widening From Paces Mill Rd. To Akers Mill Rd.
STP00-0001-05(047), Cobb Counties
P.I. No. 721152

Dear Mr. Matthews:

Outlined below are updated responses to the recommendations included in the Value Engineering (VE) report for the above referenced project, as requested.

Alternative R-1

Description: Use a 1-1/2 inch overlay in lieu of a 3-1/2 inch overlay on existing pavement.
Cost savings: $66,000
Response: *GDOT's Office of Materials Research (OMR) approved the 3-1/2 inch overlay design for the adjacent project on US 41 (PI 720125) on January 15, 2010. OMR has stated that they would not approve a 1-1/2 inch overlay section for this project.*
Final Disposition: **NO**

Alternative R-2

Description: Provide a 10-ft.-wide multi-use trail in lieu of 12-ft.-wide the length of the project
VE Cost savings: $48,000 (*MA estimated cost savings: $48,000 CST - $78,000 DES = -$30,000)*
Response: *This path serves as a connection between the Rottenwood Creek and Silver Comet trail networks and, therefore, has regional significance. The 12-foot section matches the path dimensions on the adjacent project (PI 720125).*
The VE recommendation includes reducing the overall shoulder width by 2 feet. The estimated cost to re-design (including re-design of all retaining walls, drainage outfalls, etc.) is $78,000, or approx. $30,000 greater than the projected cost savings on construction.
Final Disposition: **NO**

Alternative R-3

Description: Provide a 5-in.-thick concrete section in lieu of 4-in. thick for the multi-use trail.
VE Cost savings: (5 inch section = $0; 6 inch section = -$1,000)
Response: *The concrete multi-use path section was incorrectly labeled on the VE plans as 4 inches thick. The approved plans for the adjacent project (PI 720125) includes a 6-inch concrete section for the path. The typical sections will be corrected to show a 6-inch concrete section for the path. The VE report incorrectly shows a total cost savings of $20,000 for the 5 inch section. According to the estimates in the VE report (p. 21 and 22), the 5 inch section would have an additional initial cost of $47,000, and a life cycle savings of $47,000, which would result in a total cost savings of $0. Assuming another $47,000 increase in life cycle savings with the 6 inch section vs. the 5 inch section, the 6 inch section results in a total savings of -$1,000 (-$95,000 initial cost + $94,000 life cycle cost savings). With a negligible total cost savings between the 4, 5, and 6 inch sections, we recommend the 6 inch section since it would have less life cycle maintenance and therefore less disruption to pedestrian traffic.*
Final Disposition: **YES (6-inch section)**

MA

Alternative R-4

Description: Provide a 2-1/2ft.-wide stamped concrete strip in lieu of a 6-ft. - wide grass strip on the left shoulder the length of the project

VE Cost savings: $262,000 (*MA estimated cost savings: $262,000 CST - $240,000 DES = $20,000)*

Response: *Reducing the shoulders would require the sidewalks to wrap around the valley gutters in order to meet the minimum 2% cross slope required by ADA. (See attached GA STD Detail A2). The resulting 'jagged' sidewalk alignment is less desirable aesthetically and for pedestrian movement (joggers, etc.). Shifting the sidewalks closer to the roadway is also less safe for pedestrians.*

The Cumberland Community Improvement District (CCID) also proposes to add streetscaping/landscaping along this route in the future. Reducing the 6-foot strip that is currently proposed between the curb and the sidewalk to 2'-6" would limit landscaping options.

Changing the typical section would result in the following:

1) ***Schedule delay**. The plan changes associated with this recommendation would delay the project schedule for by at least 6 months. Additional work would include revision to all roadway plans, with the exception of the roadway profiles, re-design of all retaining walls, a revised concept report, an additional PIOH, an additional preliminary field plan review (PFPR), an environmental re-evaluation, and a general revision to the right-of-way plans. Right-of-Way plans are approved for this project and acquisition is scheduled to begin this fiscal year.*
2) ***Significant re-design cost**. The additional P&E outlined above would require approximately $240,000 in additional design fees.*

Final Disposition: **NO**

Alternative R-5

Description: Provide a 2-ft.-wide stamped concrete strip in lieu of a 6-ft. wide grass strip on the right shoulder the length of the project.

VE Cost savings: $249,000

Response: *Same as R-4 above*

Final Disposition: **NO**

Alternative R-6

Description: Save 22 commercial parking spaces near Sta 78+50 LT by shifting the alignment from Sta. 75+58 +/- to Sta. 88+45 +/- further to the right and eliminating Wall No. 3 (Sta. 17+89 LT to Sta. 79+65 LT)

VE Cost savings: $357,000

Response: *Temporary impacts to the 22 parking spaces mentioned in R-6 can be avoided by simply adjusting the location of wall #3. The plans currently show this wall at the bottom of the slope, adjacent to the parking lot. This design would require a permanent wall easement and temporary impacts to parking during construction of the wall. Shifting the wall to the shoulder break (adjacent to the multi-use path), as shown in the diagram below, would accomplish the same savings as alternative R-6 with minimal re-design effort.*

Final Disposition: **YES - COMPROMISE ALTERNATIVE**

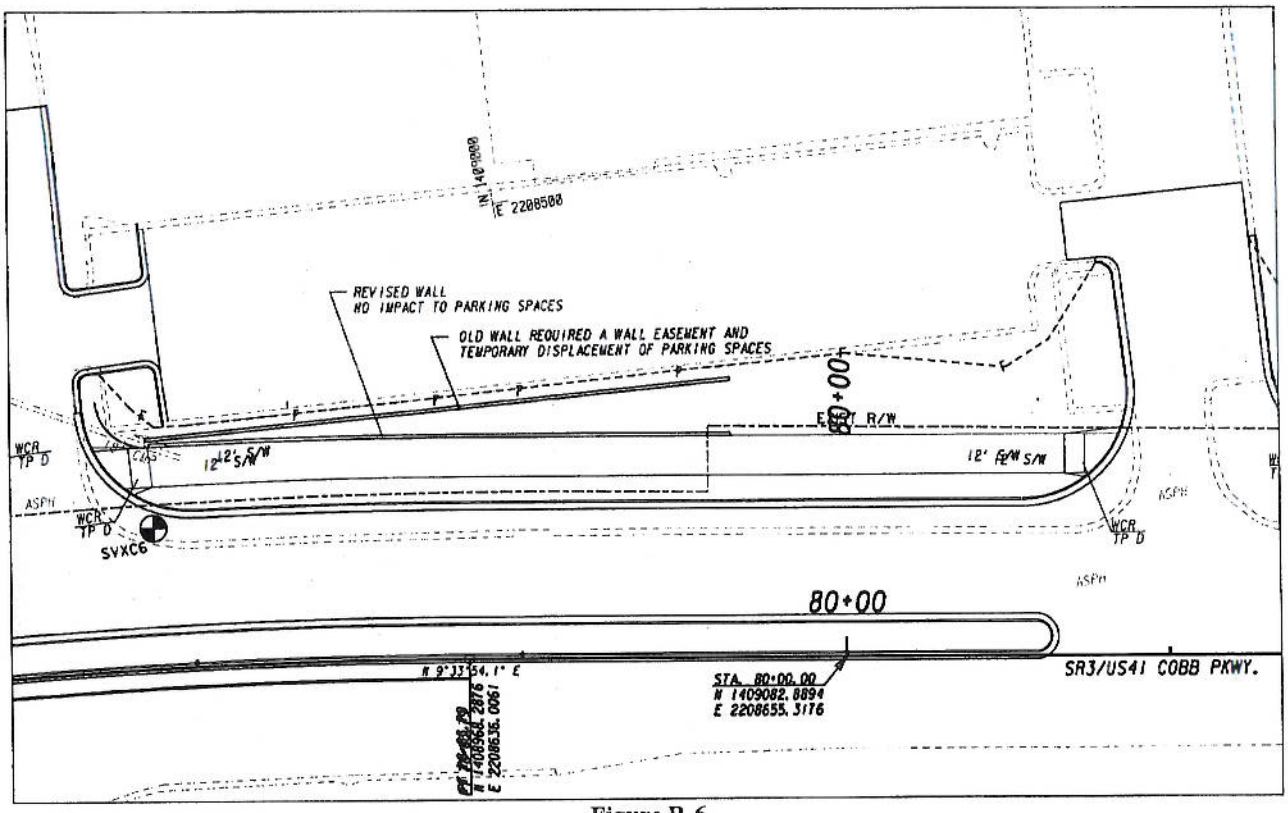


Figure R-6

Alternative R-7
Description: Provide a 175 ft. right turn lane to the access drive at Sta. 117+46 RT
VE Cost savings: $149,000
Response: *Agree. MA will make this revision.*
Final Disposition: **YES**

Alternative R-10
Description: Slope the sidewalk and grass strip to the outside at Sta. 98+14 RT
VE Cost savings: $0.00
Response: *Agree. MA will make this revision.*
Final Disposition: **YES**

Alternative R-11
Description: Provide a 2-1/2-ft.-wide stamped concrete strip and 10-ft.-wide multi-use trail at all right turn lanes on the left side shoulder
VE Cost savings: $139,000
Response: *Reducing the shoulders and paving the buffer between the path and the roadway would result in a typical section devoid of landscape features and would be contrary to the CID's goal to make this a more pedestrian friendly corridor.*
Final Disposition: **NO**

MA

Alternative R-12
Description: Provide 2-ft.-wide stamped concrete in lieu of a 6-ft.-wide grass strip at all right turn lanes on the right side shoulder.
VE Cost savings: $108,000
Response: *Same as R-11.*
Final Disposition: **NO**

Alternative R-13
Description: Save eleven commercial parking spaces near Sta. 74+50 LT by reducing the widths of the right turn lane, the multi-use trail, and the grass strip between Sta. 73+16 LT and Sta. 75+94 LT
VE Cost savings: $161,000
Response: *The proposed shoulder encroaches on the parking spaces near 74+50 LT by approx. 26 feet (average). The VE recommendation R-13 would only reduce the encroachment by 7'-6", and would still impact these parking spaces.*
Final Disposition: **NO**

Alternative R-14
Description: Eliminate the short right turn lane at Akers Mill Rd. (Sta.119+00 RT to Sta. 122+00 RT) by making the 4th lane a right turn lane
VE Cost savings: $25,000
Response: *A capacity analysis (HCS – see attached) shows no change to the level of service with VE alternative R-14; therefore, we concur with this recommendation.*
Final Disposition: **YES**

Alternative W-2
Description: Reduce the height of Wall No. 2 (Sta. 80+00 RT to Sta. 87+06 RT) by shifting the wall closer to the existing right-of-way boundary and grading the slope.
VE Cost savings: $334,000
Response: *With the current design, wall no. 2 is approximately 34 feet from the existing right-of-way limit. It was the intent of this design to minimize impacts to the existing tree buffer between the River Parkway apartment complex and the proposed roadway. VE alternative W-2 would completely eliminate the tree buffer.*
Final Disposition: **NO**

Alternative W-3
Description: Use a gravity wall with handrail in lieu of an MSE wall for Wall No. 6 (Sta. 104+87 LT to 106+62 LT)
VE Cost savings: $56,000
Response: *Agree. MA will make this revision.*
Final Disposition: **YES**

Alternative W-4
Description: Use a gravity wall with handrail in lieu of a parapet retaining wall for Wall No. 7 (Sta. 114+95 RT to Sta. 116+54 RT)
VE Cost savings: $32,000
Response: *Agree. MA will make this revision.*
Final Disposition: **YES**

Alternative W-7
Description: Provide a gravity wall from Sta. 116+00 LT to Sta. 117+00 LT to save parking spaces
VE Cost savings: $98,000
Response: *With the current typical section, the gravity wall alternative would still impact these parking spaces. The wall*

and multi-use path would both encroach on the parking spaces.

Final Disposition: **NO**

Alternative W-8

Description: Remove the Type H Traffic Barrier and provide a 42 in. pipe handrail on top of Wall Nos. 1, 3, and 6

VE Cost savings: $82,000 (*Revised savings, eliminating walls 1 and 6 = $21,000)*

Response: *Walls 1 and 6 are no longer part of this project. MA will make this revision to wall no. 3.*

Final Disposition: **YES**

Alternative D-1

Description: Provide underground detention in lieu of an above ground detention basin at Sta. 83+00 LT

VE Cost savings: $258,000 (*MA estimate = -$57,000)*

Response: *The VE estimate assumes $315,000 in cost savings by converting the required R/W for this detention structure to permanent easement. For maintenance purposes, this would not be recommended. GDOT requires that all permanent drainage structures be placed on right-of-way. Assuming the structure will remain on right-of-way, alternative D-1 would be $57,000 more expensive than the current design (not including extra maintenance costs or re-design costs).*

Final Disposition: **NO**

Alternative D-2

Description: Use additional cross-drains to reduce longitudinal drain pipe requirements

VE Cost savings: $30,000 (*MA estimate: $30,000 CST - $20,000 DES = $10,000)*

Response: *The purpose of the current design was to avoid undesirable maintenance of traffic during construction and during future maintenance that would be involved with multiple cross-drain pipes. Given the high traffic volumes (approx. 50,000 vehicles per day), cut & cover operations for multiple cross-drains would be undesirable. This alternative would also require a complete re-design of the longitudinal drainage system (1 mile) which would cost approx. $20,000.*

Final Disposition: **NO**

We appreciate the Value Engineering Team's efforts on this study. They have provided several good ideas which, with the Department's approval, we will incorporate into the final design.

If there are any questions concerning this information, or if any additional information is needed, please do not hesitate to contact me at 770-263-5945.

Thank you,

Brad Hale

Brad Hale, P.E.
Project Manager

cc: File 03500, Mike Cates (Cobb DOT)

US 41 WIDENING FROM PACES MILL RD TO AKERS MILL RD
GDOT P.I. No. 721152

Estimated Re-Design Costs
for VE Alternative R-2

26-Jul-11

MORELAND ALTOBELLI ASSOCIATES, INC.

1. Direct Labor (Specify)				
Personnel	**Est Hours**	**Rate/Hr**	**Est. Cost ($)**	**Totals**
ENGINEERING				
Principal		$150.00		
Sr. Roadway Engineer	43	$140.00	$6,020.00	
Roadway Engineer	432	$98.00	$42,336.00	
Traffic Engineer		$98.00		
Sr. Structural Engineer	4	$140.00	$560.00	
Structural Engineer	88	$98.00	$8,624.00	
Sr. Geotech Eng.		$120.00		
Geotech Eng.		$98.00		
Subtotal	**567**			**$57,540.00**
ENVIRONMENTAL				
Sr. Environmental Planner		$140.00		
Environmental Planner		$75.00		
Environmental Technician		$66.00		
Subtotal				
SURVEYING				
Survey Proj. Manager (RLS)		$120.00		
Survey Technician		$66.00		
Survey Crew (2 Man)		$100.00		
Subtotal				
SUPPORT STAFF				
Design Technician	312	$66.00	$20,592.00	
Clerical		$50.00		
Courier		$50.00		
Subtotal	**312**			**$20,592.00**
Total Direct Labor				**$78,132.00**
2. Other Direct Costs (Specify)				
Plotting/Reproduction (PFPR)				
Travel/Mileage				
Total Other Direct Costs				
3. Maximum Amount of Contract Proposal (1) + (2)				**$78,132.00**

US 41 WIDENING FROM PACES MILL RD TO AKERS MILL RD
GDOT P.I. No. 721152
26-Jul-11

MAN-HOUR ESTIMATE - VE Alternative R-2

Task Description	ENGINEERING						ENVIRONMENTAL			SUPPORT STAFF		
	Principal	Sr. Roadway Engineer	Roadway Engineer	Traffic Engineer	Sr. Structural Engineer	Structural Engineer	Sr. Env. Planner	Env. Planner	Env. Technician	CAD Operator	Clerical	Courier
PLANNING & ENVIRONMENTAL ENG.												
CE Re-evaluation												
Concept Report Revision		4	24									
TOTALS		4	24									
ENGINEERING / PLAN REVISIONS												
Road Design												
Typical Sections		1								8		
Horizontal Geometry		4	16							40		
Cross Sections		4	40							24		
Staging Cross-Sections		2	40							40		
Update Construction Limits		8	80							80		
Drainage Design / Hydrology												
Roadway Drainage Design												
Drainage Profiles		2	24									
Erosion Control												
Update BMP Plans (Per Stage)		4	40							20		
Sediment Basins (Calcs & Plans)												
Structural Design												
Retaining Wall Envelopes (8)		4	80							20		
Preliminary Ret. Wall Design					4	80						
Bridge Design												
Miscellaneous												
Update Cost Estimate		2	8			8						
TOTALS		31	328		4	88				232		
R/W PLANS												
R/W Revision - All Parcels			80							80		
Quality Assurance Review		8										
TOTALS		8	80							80		
GRAND TOTALS		43	432		4	88				312		

COST WORKSHEET ARCADIS

PROJECT: SR 3/US 41/COBB PKWY WIDENING
FROM PACES MILL RD. TO AKERS MILL RD
Cobb County, Georgia

ALTERNATIVE NO.: R-3

SHEET NO.: 2 of 3

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
4 inch thick concrete section	SY	6,000	28.43	170,580			
5 inch thick concrete section	SY				6,000	36.40	218,40
6 Inch conc. Section	SY				6,000	44.39	266,34
Subtotal				170,580			218,40
Markup (%) at							
TOTAL				170,580			218,40
TOTAL (ROUNDED)				171,000			218,00

ARCADIS

LIFE CYCLE COST WORKSHEET

PROJECT: SR 3/US 41 COBB PKWY WIDENING
FROM PACES MILL RD. TO AKERS MILL RD
Cobb County, Georgia

ALTERNATIVE NO.: R-3

SHEET NO.: 3 of 3

LIFE CYCLE PERIOD: 25 years
INTEREST RATE: 3.00% ESCALATION RATE:

		ORIGINAL	PROPOSED
A.	INITIAL COST (5 in)	171,000	218,000
	Useful Life (Years) (6 in)	171,000	266,340
	INITIAL COST SAVINGS		(47,000) - 9 in
B.	RECURRENT COSTS (Annual Expenditures)		(95,340) - 6h
	1. Maintenance		
	2. Operating		
	3. Energy		
	4.		
	5. test		
	6.		
	Total Annual Costs	-	-
	Present Worth Factor	17.4131	17.4131
	Present Worth of RECURRENT COSTS	-	-

C. SINGLE EXPENDITURES			Year	Amount	PW factor	Present Worth	Present Worth
ORIG	PROP	< Put "x" in appropriate box (original design or proposed design)					
x		1.	6	17,100	0.8375	14,321	-
x		2.	11	17,100	0.7224	12,353	-
x		3.	16	17,100	0.6232	10,656	-
x		4.	21	17,100	0.5375	9,192	-
							-
							-
							-
							-

D. SALVAGE VALUE			Year	Amount	PW factor	Present Worth	Present Worth
		1.			(1.0000)	-	-
		2.			(1.0000)	-	-
		Present Worth of SINGLE EXPENDITURES				46,522	-
E.		Total Recurrent Costs & Single Expenditures (B + C + D)				46,522	-
		RECURRENT COSTS & SINGLE EXPENDITURES SAVINGS					46,522
		TOTAL PRESENT WORTH COST (A + E)				217,522	218,000
		TOTAL LIFE CYCLE SAVINGS					(478)

266,3

(48,818)

US 41 WIDENING FROM PACES MILL RD TO AKERS MILL RD
GDOT P.I. No. 721152

Estimated Re-Design Costs
for VE Alternatives R-4, R-5, R-11, R-12 and R-13

26-Jul-11

MORELAND ALTOBELLI ASSOCIATES, INC.

1. Direct Labor (Specify)				
Personnel	**Est Hours**	**Rate/Hr**	**Est. Cost ($)**	**Totals**
ENGINEERING				
Principal	6	$150.00	$900.00	
Sr. Roadway Engineer	193	$140.00	$27,020.00	
Roadway Engineer	1267	$98.00	$124,166.00	
Traffic Engineer	72	$98.00	$7,056.00	
Sr. Structural Engineer	58	$140.00	$8,120.00	
Structural Engineer	26	$98.00	$2,548.00	
Sr. Geotech Eng.		$120.00		
Geotech Eng.		$98.00		
Subtotal	**1616**			**$169,810.00**
ENVIRONMENTAL				
Sr. Environmental Planner	21	$140.00	$2,940.00	
Environmental Planner	136	$75.00	$10,200.00	
Environmental Technician	8	$66.00	$528.00	
Subtotal	**165**			**$13,668.00**
SURVEYING				
Survey Proj. Manager (RLS)		$120.00		
Survey Technician		$66.00		
Survey Crew (2 Man)		$100.00		
Subtotal				
SUPPORT STAFF				
Design Technician	834	$66.00	$55,044.00	
Clerical		$50.00		
Courier		$50.00		
Subtotal	**834**			**$55,044.00**
Total Direct Labor				**$238,522.00**
2. Other Direct Costs (Specify)				
Plotting/Reproduction (PFPR)				$2,203.00
Travel/Mileage				$172.00
Total Other Direct Costs				**$2,375.00**
3. Maximum Amount of Contract Proposal (1) + (2)				**$240,897.00**

US 41 WIDENING FROM PACES MILL RD TO AKERS MILL RD
GDOT P.I. No. 721152
26-Jul-11

MAN-HOUR ESTIMATE - VE Alternatives R-4, R-5, R-11, R-12 and R-13

	ENGINEERING						ENVIRONMENTAL			SUPPORT STAFF		
Task Description	Principal	Sr. Roadway Engineer	Roadway Engineer	Traffic Engineer	Sr. Structural Engineer	Structural Engineer	Sr. Env. Planner	Env. Planner	Env. Technician	CAD Operator	Clerical	Courier
PLANNING & ENVIRONMENTAL ENG.												
CE Re-evaluation							12	120	8			
Concept Report Revision		4	24									
Public Involvement												
Public Information Open House		5	5				5					
Response Letters		2					4	16				
Special Graphics		2	8							20		
TOTALS		13	37				21	136	8	20		

PRELIMINARY ENGINEERING												
Project Management												
Project Management / Administration	6	24										
Road Design												
Typical Sections			4							6		
Horizontal Geometry		16	90							216		
Roadway Profiles (Sidestreets)		2	32									
Intersection Sight Distance Calc's												
Superelevation Calculations			8									
Cross Sections		10	108							128		
Driveway Profiles			24									
Staging Plans			80							80		
R/W and Constr. ESMT Limits		12	136							88		
Traffic Design												
Signing and Marking Plans (Prelim)				48								
Signalization Plans				24								
Drainage Design / Hydrology												
Roadway Drainage Design		8	120									
Drainage Profiles		8	120							40		
Erosion Control												
BMP Plans (Per Stage)		6	124							88		
Sediment Basins (Calcs & Plans)												
Structural Design												

US 41 WIDENING FROM PACES MILL RD TO AKERS MILL RD
GDOT P.I. No. 721152
26-Jul-11

MAN-HOUR ESTIMATE - VE Alternatives R-4, R-5, R-11, R-12 and R-13

	ENGINEERING						ENVIRONMENTAL			SUPPORT STAFF		
Task Description	Principal	Sr. Roadway Engineer	Roadway Engineer	Traffic Engineer	Sr. Structural Engineer	Structural Engineer	Sr. Env. Planner	Env. Planner	Env. Technician	CAD Operator	Clerical	Courier
Retaining Wall Envelopes		4	60									
Preliminary Ret. Wall Design (Soil Nail)												
Bridge Design												
Preliminary Plan Preparation												
Cover, Index, General Notes			8							16		
Design Exception Reports												
Prelim. Cost Estimate		4	48			10						
Plan Reviews												
Quality Assurance Review(s)		40			40							
PFPR (Incl. Prep)		24	24		16							
Address Review Comments		8	80		2	16				80		
TOTALS	**6**	**166**	**1066**	**72**	**58**	**26**				**742**		
R/W PLANS												
R/W Plan Preparation		4	48							48		
CAiCE R/W and ESMT Chains			88									
R/W and ESMT Tables		2	28							24		
Quality Assurance Review		8										
TOTALS		14	164							72		
GRAND TOTALS	6	193	1267	72	58	26	21	136	8	834		

CALCULATIONS ARCADIS

PROJECT: SR 3/US 41/COBB PKWY WIDENING
FROM PACES MILL RD. TO AKERS MILL RD
Cobb County, Georgia

ALTERNATIVE NO.: W-8

SHEET NO.: 3 of 4

Wall Lengths

Wall No. 1 Sta. 76+50 – Sta. 73+00 = ~~350 ft.~~
Wall No. 3 Sta. 79+65 – Sta. 77+89 = 176 ft.
Wall No. 6 Sta. 106+62 – Sta. 104+87 = ~~175 ft.~~
Total Length = 702 ft.

Wall Coping Volume

Say 2 ft. x 2 ft. x ~~702~~ ft. = 2808 CF = 104 CY

176 = 704 CF = 26 CY

42" Pipe Handrail Cost

$41.92 x 42 in./34 in. (cost from 34 in. to 42 in.) = $51.78

COST WORKSHEET ARCADIS

PROJECT: SR 3/US 41/COBB PKWY WIDENING
FROM PACES MILL RD. TO AKERS MILL RD
Cobb County, Georgia

ALTERNATIVE NO.: W-8

SHEET NO.: 4 of 4

PROJECT ITEM		ORIGINAL ESTIMATE			ALTERNATIVE ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Traffic Barrier H	LF	~~782~~	177.37	124,514			
		176		31,217			
2 in. Dia. Pipe Handrail 34 in. High	LF	~~782~~	41.92	29,428			
		176		7,378			
Wall Coping Type B Concrete RW	CF				~~104~~	341.26	~~35,491~~
					26		8,873
2 in. Dia. Pipe Handrail 42 in. High	LF				~~782~~	51.78	~~36,350~~
					176		9,113
Subtotal				~~153,942~~			~~71,841~~
Markup (%) at				38,595			17,986
TOTAL				153,942			71,841
TOTAL (ROUNDED)				154,000			72,000
				39,000			18,000

HCS2000: Signalized Intersections Release 4.1d

Analyst: MA
Agency: GDOT
Date: 2/2/11
Period: AM Peak Hour
Project ID: US 41/SR 3/Cobb Parkway/Northside Parkway
E/W St: Akers Mill Road

Inter.: US 41 @ Akers Mill
Area Type: All other areas
Jurisd: Cobb County
Year : 2035 Build (Reduce 1 lane)
N/S St: US 41 / Cobb Parkway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	3	1	2	3	1	2	3	1	2	3	1
LGConfig	L	T	R	L	T	R	L	T	R	L	T	R
Volume	90	325	90	50	90	80	75	855	90	180	970	170
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			5			5			5			20

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P	P			NB	Left	P			
	Thru		P	P			Thru			P	
	Right		P	P			Right			P	
	Peds						Peds				
WB	Left	P				SB	Left	P	P		
	Thru			P			Thru		P	P	
	Right			P			Right		P	P	
	Peds						Peds				
NB	Right	P				EB	Right	P			
SB	Right	P	P			WB	Right	P	P		
Green		8.0	11.0	8.0				8.0	14.0	25.0	
Yellow		4.0	0.0	4.0				4.0	0.0	4.0	
All Red		2.0	0.0	3.0				2.0	0.0	3.0	

Cycle Length: 100.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	876	3502	0.11	0.25	29.2	C		
T	986	5187	0.36	0.19	36.2	D	32.8	C
R	549	1615	0.17	0.34	23.8	C		
Westbound								
L	280	3502	0.19	0.08	44.5	D		
T	415	5187	0.24	0.08	44.5	D	35.0+	D
R	694	1615	0.12	0.43	17.5	B		
Northbound								
L	280	3502	0.29	0.08	46.0	D		
T	1297	5187	0.72	0.25	37.7	D	36.8	D
R	646	1615	0.14	0.40	19.5	B		
Southbound								
L	981	3502	0.20	0.28	27.9	C		
T	2023	5187	0.52	0.39	24.3	C	22.6	C
R	1147	1615	0.14	0.71	4.9	A		

Intersection Delay = 29.9 (sec/veh) Intersection LOS = C

HCS2000: Signalized Intersections Release 4.1d

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: MA
Agency/Co.: GDOT
Date Performed: 2/2/11
Analysis Time Period: AM Peak Hour
Intersection: US 41 @ Akers Mill
Area Type: All other areas
Jurisdiction: Cobb County
Analysis Year: 2035 Build (Reduce 1 lane)
Project ID: US 41/SR 3/Cobb Parkway/Northside Parkway

East/West Street: Akers Mill Road
North/South Street: US 41 / Cobb Parkway

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	90	325	90	50	90	80	75	855	90	180	970	170
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PK 15 Vol	24	88	24	14	24	22	20	232	24	49	264	46
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
ParkExist												
NumPark												
No. Lanes	2	3	1	2	3	1	2	3	1	2	3	1
LGConfig	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vol			5			5			5			20
Adj Flow	98	353	92	54	98	82	82	929	92	196	1054	163
%InSharedLn												
Prop LTs		0.000			0.000			0.000			0.000	
Prop RTs		0.000	1.000		0.000	1.000		0.000	1.000		0.000	1.000
Peds Bikes	0			0			0			0		
Buses	0	0	0	0	0	0	0	0	0	0	0	0
%InProtPhase												

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arriv. Type	3	3	3	3	3	3	3	3	3	3	3	3
Unit Ext.	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext of g	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

Ped Min g	3.2	3.2	3.2	3.2

PHASE DATA

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P	P			NB	Left	P			
	Thru		P	P			Thru			P	
	Right		P	P			Right			P	
	Peds						Peds				
WB	Left	P				SB	Left	P	P		
	Thru			P			Thru		P	P	
	Right			P			Right		P	P	
	Peds						Peds				
NB	Right	P				EB	Right	P			
SB	Right	P	P			WB	Right	P	P		
Green		8.0	11.0	8.0				8.0	14.0	25.0	
Yellow		4.0	0.0	4.0				4.0	0.0	4.0	
All Red		2.0	0.0	3.0				2.0	0.0	3.0	

Cycle Length: 100.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	90	325	90	50	90	80	75	855	90	180	970	170
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj flow	98	353	92	54	98	82	82	929	92	196	1054	163
No. Lanes	2	3	1	2	3	1	2	3	1	2	3	1
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Adj flow	98	353	92	54	98	82	82	929	92	196	1054	163
Prop LTs		0.000			0.000			0.000			0.000	
Prop RTs		0.000	1.000		0.000	1.000		0.000	1.000		0.000	1.000

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound			Westbound			Northbound			Southbound		
LG	L	T	R	L	T	R	L	T	R	L	T	R
So	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lanes	2	3	1	2	3	1	2	3	1	2	3	1
fW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fHV	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fG	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fP	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fBB	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
fA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
fLU	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
fRT		1.000	0.850		1.000	0.850		1.000	0.850		1.000	0.850
fLT	0.950	1.000		0.950	1.000		0.950	1.000		0.950	1.000	
Sec.												
fLpb	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fRpb		1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000
S	3502	5187	1615	3502	5187	1615	3502	5187	1615	3502	5187	1615
Sec.												

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)		Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound								
Prot								
Perm								
Left	L	98	3502		0.03	0.25	876	0.11
Prot								
Perm								
Thru	T	353	5187	#	0.07	0.19	986	0.36
Right	R	92	1615		0.06	0.34	549	0.17
Westbound								
Prot								
Perm								
Left	L	54	3502	#	0.02	0.08	280	0.19
Prot								
Perm								
Thru	T	98	5187		0.02	0.08	415	0.24
Right	R	82	1615		0.05	0.43	694	0.12
Northbound								
Prot								
Perm								
Left	L	82	3502		0.02	0.08	280	0.29
Prot								
Perm								
Thru	T	929	5187	#	0.18	0.25	1297	0.72
Right	R	92	1615		0.06	0.40	646	0.14
Southbound								
Prot								
Perm								
Left	L	196	3502	#	0.06	0.28	981	0.20
Prot								
Perm								
Thru	T	1054	5187		0.20	0.39	2023	0.52
Right	R	163	1615		0.10	0.71	1147	0.14

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.32
Total lost time per cycle, L = 20.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.40

Control Delay and LOS Determination

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
L	0.11	0.25	28.9	1.000	876	0.50	0.3	0.0	29.2	C		
T	0.36	0.19	35.2	1.000	986	0.50	1.0	0.0	36.2	D	32.8	C
R	0.17	0.34	23.1	1.000	549	0.50	0.7	0.0	23.8	C		
Westbound												
L	0.19	0.08	43.0	1.000	280	0.50	1.5	0.0	44.5	D		
T	0.24	0.08	43.1	1.000	415	0.50	1.3	0.0	44.5	D	35.0+	D
R	0.12	0.43	17.1	1.000	694	0.50	0.3	0.0	17.5	B		
Northbound												
L	0.29	0.08	43.3	1.000	280	0.50	2.6	0.0	46.0	D		
T	0.72	0.25	34.3	1.000	1297	0.50	3.4	0.0	37.7	D	36.8	D
R	0.14	0.40	19.1	1.000	646	0.50	0.5	0.0	19.5	B		
Southbound												
L	0.20	0.28	27.5	1.000	981	0.50	0.5	0.0	27.9	C		

T	0.52	0.39	23.3	1.000	2023	0.50	1.0	0.0	24.3	C	22.6	C
R	0.14	0.71	4.7	1.000	1147	0.50	0.3	0.0	4.9	A		

Intersection delay = 29.9 (sec/veh) Intersection LOS = C

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

Input

		EB	WB	NB	SB
Cycle length, C	100.0 sec				
Total actual green time for LT lane group, G (s)					
Effective permitted green time for LT lane group, g(s)					
Opposing effective green time, go (s)					
Number of lanes in LT lane group, N					
Number of lanes in opposing approach, No					
Adjusted LT flow rate, VLT (veh/h)					
Proportion of LT in LT lane group, PLT					
Proportion of LT in opposing flow, PLTo					
Adjusted opposing flow rate, Vo (veh/h)					
Lost time for LT lane group, tL					
Computation					
LT volume per cycle, LTC=VLTC/3600					
Opposing lane util. factor, fLUo		0.91	0.91	0.91	0.91
Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)					
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g					
Opposing platoon ratio, Rpo (refer Exhibit 16-11)					
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]					
gq, (see Exhibit C16-4,5,6,7,8)					
gu=g-gq if gq>=gf, or = g-gf if gq<gf					
n=Max(gq-gf)/2,0)					
PTHo=1-PLTo					
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]					
EL1 (refer to Exhibit C16-3)					
EL2=Max((1-Ptho**n)/Plto, 1.0)					
fmin=2(1+PL)/g or fmin=2(1+Pl)/g					
gdiff=max(gq-gf,0)					
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)					
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)], (fmin<=fm<=1.00)					
or flt=[fm+0.91(N-1)]/N**					
Left-turn adjustment, fLT					

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

Input

		EB	WB	NB	SB
Cycle length, C	100.0 sec				
Total actual green time for LT lane group, G (s)					
Effective permitted green time for LT lane group, g(s)					
Opposing effective green time, go (s)					
Number of lanes in LT lane group, N					
Number of lanes in opposing approach, No					

Adjusted LT flow rate, VLT (veh/h)				
Proportion of LT in LT lane group, PLT	0.000	0.000	0.000	0.000
Proportion of LT in opposing flow, PLTo				
Adjusted opposing flow rate, Vo (veh/h)				
Lost time for LT lane group, tL				
Computation				
LT volume per cycle, LTC=VLTC/3600				
Opposing lane util. factor, fLUo	0.91	0.91	0.91	0.91

Opposing flow, Volc=VoC/[3600(No)fLUo] (veh/ln/cyc)
gf=G[exp(- a * (LTC ** b))]-tl, gf<=g
Opposing platoon ratio, Rpo (refer Exhibit 16-11)
Opposing Queue Ratio, qro=Max[1-Rpo(go/C),0]
gq, (see Exhibit C16-4,5,6,7,8)
gu=g-gq if gq>=gf, or = g-gf if gq<gf
n=Max(gq-gf)/2,0)
PTHo=1-PLTo
PL*=PLT[1+(N-1)g/(gf+gu/EL1+4.24)]
EL1 (refer to Exhibit C16-3)
EL2=Max((1-Ptho**n)/Plto, 1.0)
fmin=2(1+PL)/g or fmin=2(1+Pl)/g
gdiff=max(gq-gf,0)
fm=[gf/g]+[gu/g]/[1+PL(EL1-1)], (min=fmin;max=1.00)
flt=fm=[gf/g]+[gu/g]/[1+PL(EL1-1)]+[gdiff/g]/[1+PL(EL2-1)],(fmin<=fm<=1.00)
or flt=[fm+0.91(N-1)]/N**
Left-turn adjustment, fLT

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PEDESTRIAN-BICYCLE EFFECTS WORKSHEET

Permitted Left Turns	EB	WB	NB	SB
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Pedestrian flow rate, Vpedg (p/h)				
OCCpedg				
Opposing queue clearing green, gq (s)				
Eff. ped. green consumed by opp. veh. queue, gq/gp				
OCCpedu				
Opposing flow rate, Vo (veh/h)				
OCCr				
Number of cross-street receiving lanes, Nrec				
Number of turning lanes, Nturn				
ApbT				
Proportion of left turns, PLT				
Proportion of left turns using protected phase, PLTA				
Left-turn adjustment, fLpb				
Permitted Right Turns				
Effective pedestrian green time, gp (s)				
Conflicting pedestrian volume, Vped (p/h)				
Conflicting bicycle volume, Vbic (bicycles/h)				
Vpedg				
OCCpedg				
Effective green, g (s)				
Vbicg				
OCCbicg				

OCCr
Number of cross-street receiving lanes, Nrec
Number of turning lanes, Nturn
ApbT
Proportion right-turns, PRT
Proportion right-turns using protected phase, PRTA
Right turn adjustment, fRpb

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Cycle length, C	100.0 sec			
Adj. LT vol from Vol Adjustment Worksheet, v				
v/c ratio from Capacity Worksheet, X				
Protected phase effective green interval, g (s)				
Opposing queue effective green interval, gq				
Unopposed green interval, gu				
Red time r=(C-g-gq-gu)				
Arrival rate, qa=v/(3600(max[X,1.0]))				
Protected ph. departure rate, Sp=s/3600				
Permitted ph. departure rate, Ss=s(gq+gu)/(gu*3600)				
XPerm				
XProt				
Case				
Queue at beginning of green arrow, Qa				
Queue at beginning of unsaturated green, Qu				
Residual queue, Qr				
Uniform Delay, d1				

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 29.9 sec/veh Intersection LOS C

BACK OF QUEUE WORKSHEET

Eastbound	Westbound	Northbound	Southbound

LaneGroup	L	T	R	L	T	R	L	T	R	L	T	R
Init Queue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Rate	50	129	92	27	35	82	42	340	92	101	386	163
So	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
No.Lanes	2	3	1	2	3	1	2	3	1	2	3	1
SL	1805	1899	1615	1805	1899	1615	1805	1899	1615	1805	1899	1615
LnCapacity	451	361	549	144	152	694	144	475	646	505	741	1147
Flow Ratio	0.03	0.07	0.06	0.01	0.02	0.05	0.02	0.18	0.06	0.06	0.20	0.10
v/c Ratio	0.11	0.36	0.17	0.19	0.23	0.12	0.29	0.72	0.14	0.20	0.52	0.14
Grn Ratio	0.25	0.19	0.34	0.08	0.08	0.43	0.08	0.25	0.40	0.28	0.39	0.71
I Factor		1.000			1.000			1.000			1.000	
AT or PVG	3	3	3	3	3	3	3	3	3	3	3	3
Pltn Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF2	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Q1	1.1	3.1	1.8	0.7	0.9	1.4	1.1	8.6	1.6	2.1	8.2	1.5
kB	0.7	0.6	0.8	0.3	0.3	1.0	0.3	0.7	0.9	0.8	1.0	1.4
Q2	0.1	0.3	0.2	0.1	0.1	0.1	0.1	1.7	0.2	0.2	1.1	0.2
Q Average	1.2	3.4	2.0	0.8	1.0	1.5	1.2	10.3	1.8	2.3	9.3	1.7
Q Spacing	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9
Q Storage	0	0	0	0	0	0	0	0	0	0	0	0
Q S Ratio												
70th Percentile Output:												
fB%	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.3	1.3	1.2	1.3
BOQ	1.5	4.3	2.5	1.0	1.3	1.9	1.6	12.5	2.3	2.9	11.3	2.1
QSRatio												
85th Percentile Output:												
fB%	1.6	1.6	1.6	1.7	1.6	1.6	1.6	1.4	1.6	1.6	1.4	1.6
BOQ	1.9	5.3	3.1	1.3	1.7	2.4	2.0	14.8	2.9	3.7	13.4	2.7
QSRatio												
90th Percentile Output:												
fB%	1.9	1.8	1.8	1.9	1.9	1.9	1.9	1.6	1.9	1.8	1.6	1.9
BOQ	2.2	6.0	3.6	1.5	1.9	2.8	2.3	16.1	3.3	4.2	14.6	3.1
QSRatio												
95th Percentile Output:												
fB%	2.4	2.1	2.3	2.5	2.4	2.3	2.4	1.7	2.3	2.2	1.8	2.3
BOQ	2.8	7.2	4.4	1.9	2.4	3.5	2.9	17.8	4.1	5.2	16.3	3.9
QSRatio												
98th Percentile Output:												
fB%	2.9	2.5	2.7	3.0	2.9	2.8	2.9	1.9	2.8	2.6	1.9	2.8
BOQ	3.3	8.5	5.3	2.3	3.0	4.2	3.5	19.5	4.9	6.2	17.9	4.7
QSRatio												

ERROR MESSAGES

No errors to report.

COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
COBB	STP-001-5(47)	1	

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

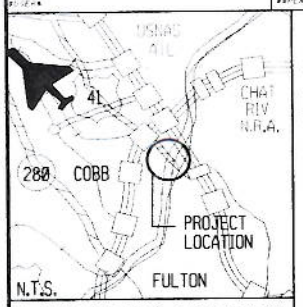
PLAN AND PROFILE OF PROPOSED

SR 3 - US 41 - COBB PKWY WIDENING FROM PACES MILL RD TO AKERS MILL RD

COBB COUNTY
PROJECT NO. STP-001-5(47)
P. I. NO. 721152

FEDERAL AID PROJECT

FEDERAL ROUTE No. US 41
STATE ROUTE No. 3

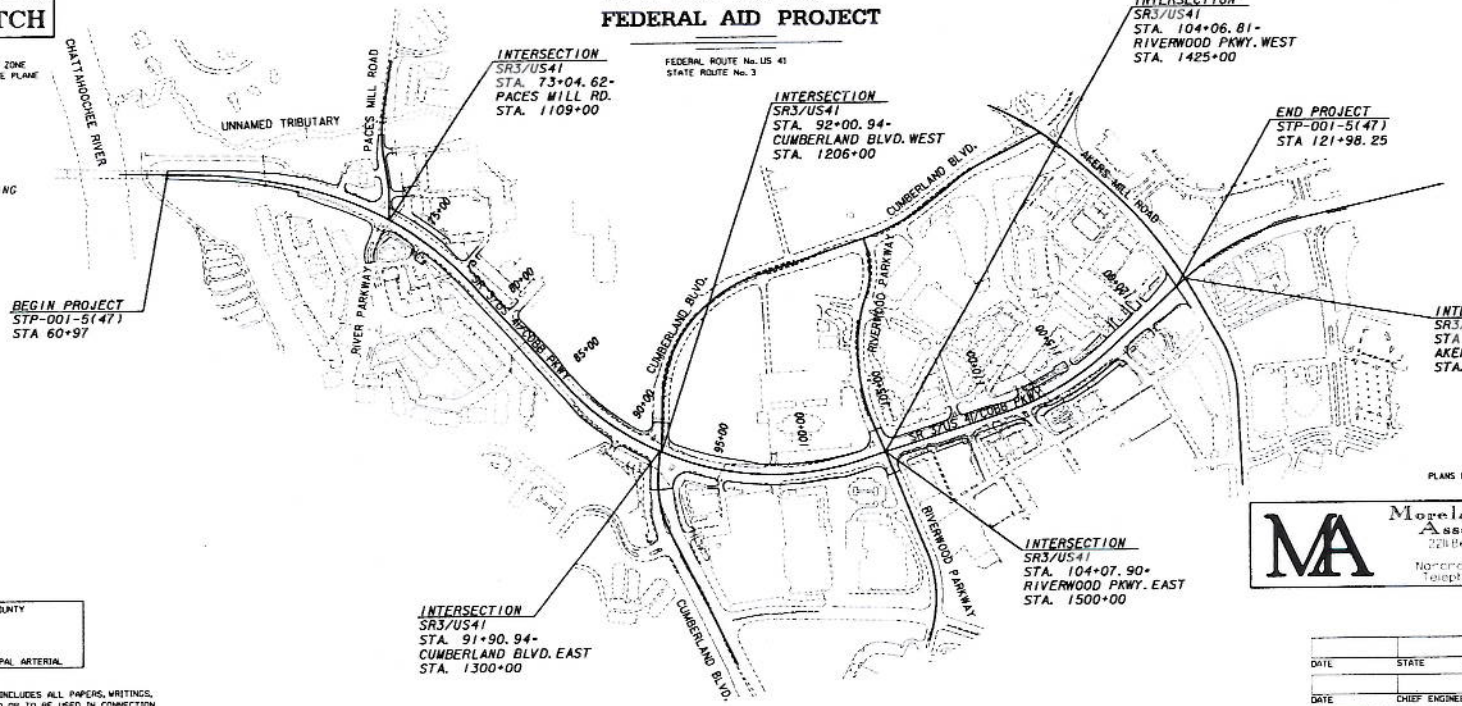


LOCATION SKETCH

NOTE: THE CO-ORDINATES LISTED ARE WEST ZONE GRID CO-ORDINATES BASED ON THE GA. STATE PLANE CO-ORDINATE SYSTEM OF 1985.
HORIZONTAL DATUM : NAD 1983 HARN
VERTICAL DATUM : NAVD 1988

MIDPOINT COORDINATE
STATION 103+00.0000
N 1412953.0831
E 2288321.6631

NOTE:
THESE PLANS ARE DESIGNED USING ENGLISH UNITS



PLANS PREPARED BY

Moreland Altobelli Associates, Inc.
2211 Beaver Ruin Road
Suite 190
Norcross, Georgia 30071
Telephone (770) 263-5945

THIS PROJECT IS LOCATED 100% IN COBB COUNTY AND 100% IN CONGRESSIONAL DISTRICT 6 .

PROJECT DESIGNATION : EXEMPT
POP CLASSIFICATION : MAJOR
FUNCTIONAL CLASSIFICATION : URBAN PRINCIPAL ARTERIAL

NOTE :
ALL REFERENCES IN THIS DOCUMENT, WHICH INCLUDES ALL PAPERS, WRITINGS, DOCUMENTS, DRAWINGS, OR PHOTOGRAPHS USED, OR TO BE USED IN CONNECTION WITH THIS DOCUMENT, TO " STATE HIGHWAY DEPARTMENT OF GEORGIA ", "STATE HIGHWAY DEPARTMENT ", GEORGIA STATE HIGHWAY DEPARTMENT ", "HIGHWAY DEPARTMENT ", OR " DEPARTMENT " WHEN THE CONTEXT THEREOF MEANS THE STATE HIGHWAY DEPARTMENT OF GEORGIA MEAN, AND SHALL BE DEEMED TO MEAN THE DEPARTMENT OF TRANSPORTATION.

THE DATA, TOGETHER WITH ALL OTHER INFORMATION SHOWN ON THESE PLANS OR IN ANYWAY INDICATED THEREBY, WHETHER BY DRAWINGS OR NOTES, OR IN ANY OTHER MANNER, ARE BASED UPON FIELD INVESTIGATIONS AND ARE BELIEVED TO BE INDICATIVE OF ACTUAL CONDITIONS. HOWEVER, THE SAME ARE SHOWN AS INFORMATION ONLY, ARE NOT GUARANTEED, AND DO NOT BIND THE DEPARTMENT OF TRANSPORTATION IN ANY WAY. THE ATTENTION OF BIDDER IS SPECIFICALLY DIRECTED TO SUBSECTIONS 102.04, 102.05, AND 104.03 OF THE SPECIFICATIONS.

DESIGN DATA:		
TRAFFIC A.D.T.:	31,240	(2010)
TRAFFIC A.D.T.:	50,580	(2030)
TRAFFIC D.H.V.:	5,635	(2030)
DIRECTIONAL DIST.:	50%	
% TRUCKS:	2%	
% 24 HR. TRUCKS:	4%	
SPEED DESIGN:	45 MPH	

LENGTH OF PROJECT	COUNTY NO. 067 MILES
NET LENGTH OF ROADWAY	1.156
NET LENGTH OF BRIDGES	0.000
NET LENGTH OF PROJECT	1.156
NET LENGTH OF EXCEPTIONS	0.000
GROSS LENGTH OF PROJECT	1.156

SCALE IN FEET
0 300 600 1200

DATE	STATE DESIGN ENGINEER	
DATE	CHIEF ENGINEER	
LOCATION AND DESIGN APPROVAL DATE		
PLANS COMPLETED DATE		

REVISION DATES:

PRECONSTRUCTION STATUS REPORT FOR PI:721152-

PROJ ID : 721152-
COUNTY : Cobb
LENGTH (MI) 0.84
PROJ NO.: STP00-0001-05(047)
PROJ MGR: Matthews, Tim
AOHD Initials: SSH
OFFICE : Program Delivery
CONSULTANT: Local Design, Local PE funds
SPONSOR : Cobb County
DESIGN FIRM: Moreland Altobelli Associates, Inc.

SR 3/US 41/COBB PKWY FM PACES MILL RD TO AKERS MILL ROAD

MPO: Atlanta TMA
TIP #: CO-231
MODEL YR : 2020
TYPE WORK: Widening
CONCEPT: ADD 6U(MED 20)
PROG TYPE: Reconstruction/Rehabilitation
Prov. for ITS: N
BOND PROJ :

PRIORITY CODE: BOARD
DOT DIST: 7
CONG. DIST: 6
BIKE: Y
MEASURE: E
NEEDS SCORE: 07
BRIDGE SUFF:

MGMT LET DATE : 12/15/2012
MGMT ROW DATE : 04/22/2011
BASELINE LET DATE: 12/05/2012
SCHED LET DATE : 4/9/2013
WHO LETS?: GDOT Let
LET WITH :

BASE START	BASE FINISH	LATE START	LATE FINISH	TASKS	ACTUAL START	ACTUAL FINISH	%
				Concept Development	5/28/1987	5/30/2000	100
				Concept Meeting	5/28/1987	5/28/1987	100
				PM Submit Concept Report	4/25/2000	5/30/2000	100
				Concept Report Review and Comments	5/16/1988	5/16/1988	100
				Management Concept Approval Complete	**5/19/1988**	**5/24/1988**	**100**
				Revise or Re-validate Approved Concept	12/1/2004	2/1/2005	100
	2/24/2011		9/1/2011	Value Engineering Study	10/25/2010		83
				Public Information Open House Held	9/14/2007	9/15/2007	100
				Environmental Approval	**8/25/1987**	**7/22/1993**	**100**
				Pub Hear Held/Comm Resp (EA/FONSI, GEPA)	11/18/1992	11/18/1992	100
				Mapping	3/5/2001	3/13/2001	100
				Field Surveys/SDE	5/25/1989	5/30/2000	100
				Preliminary Plans	**9/15/1992**	**2/1/2007**	**100**
1/18/2011	5/30/2011	8/26/2011	1/5/2012	Underground Storage Tanks			0
				404 Permit Obtainment	11/2/2006	11/22/2006	100
				PFPR Inspection	2/1/2007	2/1/2007	100
				R/W Plans Preparation	4/9/2007	6/22/2007	100
				R/W Plans Final Approval	**6/25/2007**	**6/29/2007**	**100**
				L & D Approval	6/29/2007	7/9/2007	100
3/28/2011	4/22/2011		8/25/2011	R/W Authorization	11/19/2010		100
8/1/2011	8/12/2011	12/2/2011	12/15/2011	Stake R/W			0
				Soil Survey	7/22/1993	11/10/2005	100
4/25/2011	**1/30/2012**		**3/8/2012**	**Final Design**	**7/1/2011**		14
2/28/2012	2/28/2012	4/6/2012	4/6/2012	FFPR Inspection			0
3/7/2012	3/20/2012	4/16/2012	4/27/2012	Submit FFPR Responses (OES)			0

PROGRAMMED FUNDS

Activity	Approved	Proposed	Cost	Fund	Status	Date Auth
PE	NONE	2012	190,000.00	L240	PRECST	
ROW	2008	2008	1,189,357.00	L240	AUTHORIZED	8/10/2007
ROW	2011	2011	15,413,571.75	L240	AUTHORIZED	8/10/2007
ROW	2011	2011	537,071.25	L680	AUTHORIZED	8/10/2007
CST	2017	2013	9,731,824.61	L240	PRECST	

Cost Estimate Amount

Activity	Amount	Date
PE	$190,000.00	
ROW	$1,189,357.00	1/31/2011
ROW	$15,413,571.75	1/31/2011
ROW	$537,071.25	1/31/2011
CST	$9,353,926.00	1/31/2011

STIP AMOUNTS

Activity	Cost	Fund
PE	0.00	L240
ROW	0.00	L240
ROW	19,810,642.00	L240
ROW	0.00	L680
CST	0.00	L240

PDD: GOOD PROJECT. DOT DESIGNING. 10/8/99. Let w/720125. 3/10/04.
Bridge: NO BRIDGE REQUIRED
Design: OPD-TWM. ROW funds in FY11- 4/2011
EIS: FONSI| Apvd7-22-93|Reev05.26.2011\OnSchedule-Let\Bowman 05.26.2011
LGPA: PMA SGN COBB DO PE & UTILITIES 11-25-03.
Planning: SR 3/US 41/Cobb Pkwy from Paces Mill Rd. to Akers Mill Rd.is on the ARC Bike Trans and Ped Walkways Plan pg 65 & 92
Programming: SPLIT FM 721150 . PE=NH-001-5(34) $ SHWN IN 721150|#1 2-08|#2 12-09|PI# 0008914 RW FUNDS $537,653 ADDED TO THIS PROJ 9-2010|#3 7-2011
ROW: See Dist 1/19/11 Requested a December 2012 let date. ANW Funding was to be deobligated and authorized on P.I. 720125-kta
Traffic Op: pfpr sent 1/12/07 w/r
UST: MC
Utility: CC: MPLANS TO DZN 11/10 (-2). SUE lvl B apprvd 8/7/07
EMG: 2050 (H85(94)-W/V88); PE BY COUNTY;D=CONSULT(MAAI)
Engr Services: VE Report distributed 3/8/11

District Comments

COBB/MAAI. THIS PROJECT NEEDS TO INCLUDE MULTI-USE PATH TO MATCH BRIDGE PROJECT. (8-21-02) LOCALS WANT 6-LANE. NOT MODELED THAT WAY. DOING TRAFFIC STUDY. (9/22/03) LOCALS TO DO PE.COBB/MAAI TO DESIGN; (3/10/04) EXPECT CONCEPT IN MAY 04. COORDINATE WITH 720125. (4/15/05) NO ACTIVITY. (D.R. 3/5/09) DISTRICT R/W ESTIMATES 24 MONTHS TO ACQUIRE R/W AFTER FUNDS ARE AUTHORIZED.

Project manager Comments: 8/2011, ROW authorization pending final signature.

R/W Comments: 8/15/11, R/W on hold pending plan revisions affecting every parcel. ANW

Prel. Parcel CT:	24	**Total Parcel in ROW System:**	24	**Cond. Filed:**	0	**Acquired by:**	DOT
Under Review:	0	**Options - Pending:**	0	**Relocations:**	0	**Acquisition MGR:**	Wise, Adrienne
Released:	0	**Condemnations- Pend:**	0	**Acquired:**	0	**R/W Cert Date:**	

DEEDS CT: 0